Space Weather Forecast

Issued on Friday 6 December 2024 at 12:07 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Low to Moderate solar activity. Slight chance G1/Minor Storm Day 4 (09 Dec).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Moderate with a flare peaking at 06/0920 UTC from the southeast disc. There are eight active regions currently on the disc, however the majority of these are small and simple, with no significant development occurring. A region in the southwest is showing some minor magnetic complexity, but has a fairly simple structure, with a main leader spot and much smaller trailers. Another region in the southeast also appears to be comprised of a relatively small leader spot followed by simple trailers. A further region in the southeast is perhaps the most active region currently on the disc, however this appears to be a fairly small and simple bipolar group.

No Earth-directed Coronal Mass Ejections (CMEs) were observed in the last 24 hours.

Solar Wind / Geomagnetic Activity: Solar winds declined from slightly elevated to background levels, with wind speeds initially around 430 km/s, then near 380 km/s by the end of the period. Total Interplanetary Magnetic Field (IMF) was weak, while the north-south component varied weakly. Geomagnetic activity was Quiet (Kp 0-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) persisted at background levels with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate activity is expected with a chance of isolated Moderate-class flares.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs currently expected. Background or perhaps slightly elevated solar wind speeds are likely to continue through Days 1-3 (06-08 Dec). Then there is a likely connection to a coronal hole fast wind on Day 4 (09 Dec), or perhaps after the end of this period. Wind speeds of 450-500 km/s are probable.

Overall mainly Quiet conditions at first, which may increase to Unsettled to Active with a slight chance of G1/Minor Storm intervals by the end of Day 4 (09 Dec).

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Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to persist at background levels with only a very slight chance of rising given any notable flare activity.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	1	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	Yes	50	50	50	50
Very Active	R3-R5 (X Class)	No	5	5	5	5

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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